Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Status Of State Action To Achieve	)	CC Docket No. 94-102
Effective Deployment Of E911	)	
Capabilities For Multi-Line Telephone	)	
Systems (MLTSs)	)	

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Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. § 1.415, 1.419, and the Commission's Public Notice, DA 04-3874, released March 29, 2004, Avaya Inc. ("Avaya") submits these comments in the above-captioned proceeding.[1]

INTRODUCTION

The Commission has made substantial progress in protecting the public safety and security of U.S. citizens by adopting measures designed to ensure that all local telephone customers have access to Enhanced 911 ("E911") emergency telephone services. As the Commission has recognized, however, the lack of effective implementation of E911 capabilities for multi-line telephone systems ("MLTS") creates an "unacceptable gap in the emergency call system [that] could have a deleterious effect on our homeland security system."[2] In 2003, the Commission held that it would initially rely on states to enact legislation and regulations to bring E911 capabilities to MLTS customers, and stated that it "expects states to act expeditiously in

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[1] Avaya is one of the world's leading developers of telecommunications enterprise solutions, including multi-line telephone systems and associated end-user equipment.

[2] Report and Order and Second Further Notice of Proposed Rulemaking, *Revision of the Commission's Rules to Ensure Compatibility With Enhanced E911 Emergency Calling Systems et al.*, 18 FCC Rcd. 25340, ¶ 50 (2003) ("*2003 E911 R&O*").

this area" and that the Commission would in the future "examine the progress states have made in implementing MLTS E911 capability." *2003 E911 R&O* ¶ 50.

The Public Notice (at 1) "solicits comment about the progress made by states in implementing E911 solutions for MLTS." The short answer is that the vast majority of states have made little or no progress in implementing E911 solutions for MLTS. It appears that only 13 states have even attempted to enact such legislation, and several of those states have adopted requirements that are technically infeasible because they fail to reflect the respective roles of MLTS providers, local exchange carriers ("LECs") and Public Safety Answering Points ("PSAPs") in providing E911 service. Moreover, the states that have adopted E911 requirements for MLTS providers have often taken different approaches that sometimes result in inconsistent requirements from state to state.

In fact, the often inconsistent statutes and regulations adopted by some states may have actually *stifled* the expeditious deployment of E911 solutions. Where states have adopted technically infeasible requirements, MLTS providers have substantially diminished incentives to try to implement E911 solutions because of potential liability for failing to meet the impossible technical requirements. Similarly, the inconsistent requirements adopted by the states discourage deployment of E911 capabilities, because MLTS customers are often large enterprises with operations in multiple states. The inconsistent requirements therefore require MLTS providers to develop MLTS systems that satisfy each of the inconsistent state obligations – a process that is very expensive and time consuming. These inconsistencies also deter innovation because there is far less benefit to developing new E911 capabilities that satisfy the statutory or regulatory requirements of only a few states.

The Commission cannot rely on local exchange carriers ("LECs") to fill the gaps left by the states. That would almost surely lead to a patchwork of incompatible requirements that, again, would make it difficult for MLTS operators to provide large interstate enterprises with uniform E911 service. Moreover, it is unclear whether the LECs – many of which themselves offer MLTS services – have the appropriate incentives to adopt competitively neutral tariffs.

Avaya has always been committed to providing customers with equipment capable of providing E911 services. In fact, notwithstanding the absence of uniform standards, Avaya has taken the initiative by building E911 capabilities into most of its MLTS equipment at no extra charge. But, as the Commission has recognized, E911 capable equipment is only one of the components necessary to the successful provisioning of E911 services. *2003 E911 R&O* ¶ 52. "[E]ffective deployment of E911 from MLTS requires technical coordination among the MLTS manufacturer, the local exchange carrier, the PSAP, and the MLTS operator." *Id.* Absent appropriate uniform regulations that ensure interoperability of each of the necessary components of E911-capable MLTS, the public safety and security offered by such systems cannot be realized on a widespread basis.

It is now time for the Commission to adopt appropriate uniform national standards that ensure the expeditious deployment of E911 capable MLTS services. The Commission does not, however, have to start from scratch. A couple of states – Kentucky and Maine – have developed and implemented legislation that is a good starting point for striking an appropriate balance between ensuring expeditious deployment of MLTS-capable E911 services and providing proper incentives to invest in new innovative services. The "Model Legislation" endorsed by the Commission also provides an appropriate starting point for such regulations. The Commission

should thus seek public comment and expeditiously act on appropriate uniform standards for national implementation of E911 capable MLTS.

I. STATES HAVE FAILED EXPEDITIOUSLY TO IMPLEMENT APPROPRIATE RULES FOR ENSURING E911 CAPABLE MLTS.

The vast majority of states have failed to adopt *any* standards or requirements to ensure the expeditious implementation of E911-capable MLTS. Avaya has identified only 13 states that have even attempted to implement standards to ensure the rapid deployment of E911-capable MLTS: Arkansas, Colorado, Connecticut, Florida, Illinois, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Texas, Vermont, and Washington.[3] And, many of these states have adopted standards that, individually or collectively, may actually deter the development and deployment of E911-capable MLTS.

As the Commission points out (Public Notice at n.3), traditional E911 service is provided as follows: When a caller dials 911, the call is sent to the Public Switched Telephone Network ("PSTN"), and the caller's telephone system supplies the caller's telephone number to the PSTN. The PSTN then connects the call to the PSAP and delivers the caller's telephone number to the PSAP. The PSAP uses the caller's telephone number as an index to look up the caller's location in the "automatic location information" ("ALI") database. Equipment at the PSAP then displays the caller's telephone number and location information.

The information that an MLTS can send to a PSAP, therefore, is constrained by the amount of information that an MLTS can transmit to the PSTN. Today, the PSTN accepts only a telephone number from a MLTS. Therefore, absent substantial reforms to the PSTN – or direct connections to the PSAP (and upgrades to the equipment at the PSAP) – it is impossible for an

[3] A summary of and the content of the legislation adopted by these states is available at <http://www.apcointl.org/about/pbx/> and at <http://www.enhanced911.com/src/03_sec/e911/media/E-911%20Enacted%20Legislation.pdf>.

MLTS to transmit to the PSAP during a 911 call any information other than the caller's telephone number. Moreover, because it is the equipment at the PSAP – not at the MLTS – that is responsible for displaying the caller's telephone number and address, an MLTS cannot today be responsible for displaying any information at the PSAP.

Notwithstanding these technical limitations, the Florida, Louisiana and Minnesota legislatures have passed laws that would subject a MLTS to liability unless it is "capable of providing automatic location identification." Fl.Stat. 365.175(e)(2); LA R.S. 33:9110(6); MN Stat. 403.15. As noted, however, a MLTS cannot provide automatic location identification – even if it tried to do so – because the PSTN will accept only a single telephone number. Further, the Florida and Louisiana legislatures require a MLTS to be capable of "automatic[ally] display[ing] at the . . . PSAP . . . the caller's telephone number, the address or location of the telephone, and the supplementary emergency service information." Fl.Stat. 365.175(e)(2); LA R.S. 33:9110(6). As noted, however, it is the PSAP's equipment that is responsible for displaying such information; the MLTS operator has no control over that equipment. The legislation adopted in Florida, Louisiana and Minnesota thus deters the deployment of any MLTS – including E911-capable MLTS – because MLTS providers could be subject to substantial liability for failing to comply with the impossible requirements of the legislation.

The E911 legislation and rules adopted by every state (except Kentucky, Maine and Minnesota) have another fundamental flaw. They fail to provide for an appropriate time period for the MLTS Operator and PSAP to update the automatic location information ("ALI") database when a MLTS extension number changes location. *Compare* KY Stat. 65.752(1)(c) (permitting

5 days to update the ALI).[4] In fact, the legislation adopted in the states (other than Kentucky, Maine and Minnesota) appear to require *instantaneous* updating of the ALI database. But the extension number location information in the ALI database cannot feasibly be instantaneously updated by the MLTS. Rather, to ensure accurate location information, it is necessary for the MLTS and the PSAP to work together to update the ALI database when a MLTS extension number changes locations. For example, when a MLTS extension number moves to a new office in the same building, the new extension number location information is usually sent by the MLTS to the PSAP, and the PSAP then updates the ALI database. That is precisely why the Kentucky Legislature allows five days to complete this process. *Id.*; *see also* Model Legislation, Section 5 (ALI updates must be made "as soon as practical"). Thus, again, by subjecting MLTS to liability for failing to satisfy impossible standards, deployment of appropriate E911-capable MLTS is deterred.

The legislation adopted by most states also deters deployment of new cutting-edge MLTS technology by failing to provide appropriate exceptions to the general E911 rules to account for the fact that new technology may not be compatible with existing E911 infrastructure. This omission clearly stifles incentives to develop new systems and is contrary to the Model Legislation endorsed by the Commission. *2003 E911 R&O* (¶ 59). As one example, the Model Legislation endorsed by the Commission recognizes that cutting-edge IP-based MLTS may not generally be compatible with the current E911 infrastructure. *E.g.* Model Legislation, Section 6, under Implications ("Rules need to be technology neutral and forward looking to accommodate

[4] The Maine legislation does not address this issue. Rather, the Maine legislation delegates authority to regulate most aspects of MLTS E911 to the Maine Emergency Services Communications Bureau, which has not yet adopted implementing regulations in this respect. The Minnesota legislation appears to recognize that the ALI database may be "periodically update[ed]" rather than instantaneously updated. *See* MN Stat. 403.02(15).

the introduction of new technologies. . . . It will be several years before private wireless and IP-based systems . . . can be connected to the E911 system in a way that communications the desired level of . . . information"); *see also id,* Section 11. Indeed, one of the benefits of IP-based MLTS is the ability of end-user phones to use the same telephone number in different locations served by the MLTS, or even from remote locations. As noted, however, when the telephone changes locations within an MLTS, that change cannot always be instantaneously reflected in the ALI database, which means that the PSAP may not be able to obtain accurate customer location information when a caller using IP-based MLTS has very recently changed locations. Although Avaya has made some progress in addressing this issue,[5] additional technology still needs to be developed before E911 capabilities are fully available for IP-based MLTS. Nonetheless, several states have adopted legislation that would subject IP-base MLTS to substantial liability for this technological limitation, which substantially deters continued deployment and innovation.[6]

On this record, it is clear that much of the legislation and many of the rules adopted by the few states that have even bothered to address E911 capabilities for MLTS are fundamentally

[5] Specifically, Avaya pre-administers a unique phone number and corresponding location in the ALI database for most of the ports within the MLTS. When a MLTS user dials 911, the MLTS sends the phone number associated with the *port* from which the call is made (rather than sending the *caller's* telephone number). The PSAP, therefore, is able to obtain the caller's correct location. But the PSAP does not have the caller's correct telephone number (it only has the number assigned to the port). To ensure that the PSAP is able to re-initiate a call that is pre-maturely cut off, the MLTS automatically forwards calls made to the port's telephone number to the caller's actual number. This is only a partial solution because it does not work if several callers located in a similar location (*e.g.*, 4th floor, Southwest) each dial 911, because current technology limitations permit the call forwarding feature to forward calls only to one of the several callers.

[6] To fully address the location issues for nomadic services such as IP-based MLTS, it may be necessary to require upgrades to PSAPs so that the PSAPs are capable of connecting directly to the IP-based MLTS – rather than only to the older PSTN. This would allow the PSAP to access the wealth of information, including instantaneous updates to customer locations, that will become available in the future from such systems.

flawed and inconsistent, and thus deter deployment of such systems, and development of new systems based on new technology. Moreover, the fact that the vast majority of states have not even addressed the issue creates substantial uncertainty, which further deters efficient deployment of E911-capable MLTS. To address these critical issues to public safety and national security, the Commission should intervene and implement uniform national standards.

II. THE MODEL LEGISLATION HAS PROVED INADEQUATE TO ENSURE THAT STATES ADOPT APPROPRIATE RULES REGARDING E911- CAPABLE MLTS.

The Commission also seeks comment on how states have used the model legislation submitted by the National Emergency Number Association ("NENA") and the Association of Public-Safety Communications Officials ("APCO") relating to E911-capable MLTS.[7] Avaya has previously endorsed the Model Legislation, although Avaya did point out that the model legislation contains minor flaws that should be address prior to being adopted by a state (or by the Commission).[8] As noted, most states have not bothered to implement any rules to ensure expeditious deployment of E911 capable MLTS. And, of the few states that have sought to adopt rules based on the Model Legislation, several have badly misapplied it. Indeed, many states that purported to adopt new legislation based on the Model Legislation adopted only warped short-hand versions of it, and have thus adopted legislation that is incompatible with the current E911 infrastructure or that lack critical safeguards and standards.

For example, the model legislation requires MLTS operators to send only an "Emergency Location Identification Number" – usually the caller's telephone number – to the PSAP, because that is the only information that the PSTN will accept. *E.g.,* APCO Model Legislation, Section

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[7] The Model Legislation is available at < http://www.enhanced911.com>.

[8] *See* Comments of Avaya, *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, et al.*, CC Docket No. 94-102, IB Docket No. 99-6, at 7-10 (filed Feb. 19, 2003).

3. As noted, however, several states have adopted a shorthand approach that apparently requires MLTS Operators to deliver both the caller's telephone number and the caller's location to the PSAP. As noted, however, that requirement cannot technically be satisfied by an MLTS Operator given the current E911 infrastructure. Similarly, the model legislation requires the ALI database to be updated "as soon as practicable" when the customer's location changes. APCO Model Legislation, Section 5. Again, as noted, several states have omitted this safeguard, and appear to make the MLTS operator responsible for instantaneous ALI database updates.

The model legislation also makes clear that requirements based on the current E911 infrastructure should not be instantaneously applied to new cutting-edge technologies. The Model Legislation, for example, clearly warns against applying such standards to "1) MLTS Wireless Telephones; 2) MLTS IP Telephones; and 3) IP-Based MLTS." Model Legislation, Section 11.[9] That is because these new technologies that bring important and desirable innovations and efficiencies to consumers may often be incompatible – at least initially – with existing E911 infrastructure. *Id.* Nonetheless, as described above, several states purporting to adopt E911 legislation related to MLTS failed to include these critical safeguards and thus deter the development and deployment of these new MLTS technologies.

[9] It is critical that market participants be allowed sufficient latitude to develop new technologies. The technology required to offer remote IP-based services illustrates the point. In an enterprise MLTS system in which IP phones access the IP MLTS remotely from a modem or through an Internet-based virtual private network ("VPN") tunnel, locating the caller is today a virtually impossible task. The only way to obtain location information in that instance would be for the phone user or the IP phone itself to provide the location information to the E911 system. Developing a system that can ensure E911 service in this instance will require substantial development and coordination among phone manufacturers, IP-enabled system manufacturers and data network equipment manufacturers. Current state legislation, however, deters such innovation by making such systems effectively unlawful, because the systems do not provide customer location information in a manner consistent with the current E911 infrastructure.

Simply put, the Model Legislation is, in most respects, appropriate and could, with minor modifications, provide the proper safeguards and incentives for the efficient deployment of E911 capable MLTS. The few states that have adopted rules and legislation related to E911 capable MLTS, however, have failed to properly implement the Model Legislation. Instead, most of these states have adopted perverse truncated versions of the Model Legislation that fail account for the limitations in the current E911 infrastructure, and that fail to provide appropriate incentives to develop and deploy new E911 capable MLTS. The Commission should now step in to fill this void.

III. THE COMMISSION CANNOT RELY ON LEC TARIFFS TO ENSURE APPROPRIATE IMPLEMENTATION E911 CAPABLE MLTS.

The Commission seeks comment on the extent to which local exchange carrier ("LEC") tariffs offer solutions for E911-capable MLTS. To the extent the Commission is suggesting that it should rely on a hodgepodge of LEC intrastate tariffs to ensure national deployment of E911-capable MLTS, that proposal should be rejected out of hand.[10] There are literally hundreds of different LECs operating in diverse areas throughout the country, and it is extremely unlikely that each would offer, under tariff, the necessary services required to provide E911 services for the wide range of different MLTS technologies. Rather, each LEC likely will, at most, offer different methods for providing E911-capable MLTS services, thus requiring MLTS Operators to develop multiple, inconsistent E911 MLTS solutions. That is an economically infeasible task and would severely inhibit national deployment of E911 capable MLTS. Moreover, LECs compete against other carriers to provide MLTS to enterprise customers and are thus unlikely to

[10] To the extent the Commission is proposing to implement regulations that require LECs to cooperate with MLTS operators and PSAPs to facilitate E911 capabilities for MLTS, Avaya supports that proposal. As noted, LECs play a critical roles in ensuring full E911 capabilities for MLTS.

have appropriate incentives to design tariffs that making E911 capabilities available on a competitively neutral basis.

IV. THE COMMISSION SHOULD ADOPT INDUSTRY-WIDE UNIFORM STANDARDS FOR THE IMPLEMENTATION OF E911 CAPABLE MLTS.

The Commission has made clear that "[i]f states do not act to fill in these gaps in implementation, [the Commission] may reconsider [its] decision not to implement national rules in this area." *2003 E911 R&O* ¶ 53; *see also id.* ¶ 59 (same); *Id.* ¶ 54 ("[t]he FCC warned that it is "prepared to act at the federal level, should states fail to do so"). Indeed, the Commission "agree[d] . . . that should future state regulations inhibit the development of E911 capable MLTS or make compliance difficult or impossible on a broad scale, we [the Commission] can take appropriate action or entertain preemption petitions." *2003 E911 R&O* ¶ 56. As demonstrated above, most states have failed to even attempt to "fill in the[] gaps" in the Commission's rules relating to E911 capabilities for MLTS. And, of the states that have adopted such legislation, most of that legislation, if enforced in a manner consistent with its plain language, would generally "inhibit the development of E911 capable MLTS." *Id.* ¶¶ 53, 56. Accordingly, the Commission should now intervene to protect the public safety and security of U.S. citizens by adopting measures to ensure that MLTS customers have access to E911 emergency telephone services.

The Commission has ample authority to adopt national standards in this area. "Congress has given the Commission broad authority to deal with public safety concerns in wire and radio communications." *2003 E911 R&O* ¶ 13. Indeed, Congress gave the Commission authority to regulate interstate wire and radio to make available "a rapid, efficient, nationwide, and world-wide wire radio and radio communication service with adequate facilities . . . for the purpose of promoting safety of life and property through the use of wire and radio communication." *Id.*

(citing 47 U.S.C. § 151). Thus, the Commission has correctly emphasized that "[i]n recognition of the role we [the Commission] are to play, along with the states and local governments, we find we have jurisdiction to adopt 911 rules for both wire and radio communications." *2003 E911 R&O* ¶ 13.[11]

To adopt appropriate national standards, the Commission does not have to start from scratch. Rather, as the Commission has recognized, the Model Legislation of NENA and APCO provide a good starting point for such uniform national regulation. In addition, a combination of the legislation adopted by Kentucky and Maine also provide a good starting point for implementing nationwide standards ensuring the deployment of E911-capable MLTS. The Kentucky legislation properly accounts for the limitations inherent in the existing E911 infrastructure. For example, the Kentucky legislation requires MLTS providers to transmit only the 911 caller's telephone number over the PSTN, and provides up to five days to work with the PSAP to update the ALI database when a customer changes locations. KY State § 65.752. The Maine legislation accounts for new MLTS technologies by providing the Maine Public Service Commission ("PSC") with authority to establish "exceptions and waivers" to account for "improved methods of locating emergency calls, and initiating emergency responses to such calls, made from within multiline telephone systems." Maine Leg. Title 25, Part 8, § 2934(C). The Maine legislation further requires any rules adopted by the Maine PSC to allow "for methods that do not utilize automatic location identification and automatic number identification standards." *Id.* The Maine legislation thus recognizes that cutting-edge MLTS technology – such as IP-based MLTS – may best provide the necessary emergency information by upgrading

[11] *See also* 47 U.S.C. § 154(i) ("The Commission may perform an and all acts, make such rules and regulations, and issue such orders, not inconsistent wit this Act, as may be necessary in the execution of its functions.").

PSAP equipment so that it can connect directly to the IP-based MLTS systems via the Internet or dedicated facilities.

It cannot be overemphasized that uniform national standards are critical to the efficient development and deployment of E911-capable MLTS. Absent uniform national standards, Avaya and other manufacturers will be placed in the untenable position of having to support infrastructure modifications for multiple jurisdictions. Moreover, given the rigorous requirements of product development, the continued use of a patchwork regulatory framework will ultimately drive the cost of MLTS beyond the reach of most businesses and possibly would require manufacturers to limit their product lines to compatible states (while possibly seeking legal relief in the other states). Further, as noted, because many Avaya customers operate multiple MLTSs in multiple jurisdictions – or operate a single MLTS in several jurisdictions – it would be extremely burdensome from both administrative and systems engineering standpoints to make these MLTS operators have to comply with countless varieties of E911 requirements.

CONCLUSION

For the foregoing reasons, the Commission should issue a Public Notice seeking comment on appropriate national standards for the implementation of E911 services for MLTS, and should expeditiously adopt appropriate standards.

Respectfully submitted,

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February 28, 2005

CERTIFICATE OF SERVICE

I hereby certify that on this 28th day of February, 2005, I caused true and correct copies of the forgoing Comments of Avaya to be served on all parties by mailing, postage prepaid to their addresses listed on the attached service list.

Dated: February 28, 2005
Washington, D.C.

/s/ Peter M. Andros

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